SFAN Raptor Monitoring Protocol

Executive Summary

This protocol and the attached standard operating procedures (SOP) detail the background, field methods, data management, annual and long-term reporting and analyses, and operational requirements to monitor prairie falcons (*Falco mexicanus*) at Pinnacles National Monument in California. Prairie falcons nesting at the monument are sensitive to human disturbances from climbing and hiking activities.

Raptor monitoring began in 1984 with the negotiated settlement of a potential lawsuit. The lawsuit was threatened as a result of the monument's desire to close off parts of the park including popular climbing routes to reduce access to breeding prairie falcon areas. The compromise negotiated required the park to monitor cliff nesting raptors annually to track breeding behavior and establish climbing advisories only in those areas where falcon nesting activity occurs. This has been largely perceived as a win-win by both the monument and the climbing community.

Initially, raptor monitoring focused on minimizing disturbance in areas regularly visited by climbers (core areas). As time allowed, monitoring was also conducted in areas less accessible to the public (non-core areas). Expanding the monitoring area has allowed the park to evaluate long-term changes in population and fecundity. The monitoring described in this protocol is focused on the following objectives:

1. Track changes in prairie falcon occupancy for all historically occupied territories.

2. Track changes in prairie falcon fecundity success as measured by a. number of chicks/nest produced and b. number of chicks/nest fledged in historically occupied areas.

The field season begins in January with the onset of the nesting season. The last nestlings typically fledge by mid July. Field surveys are conducted by one technician throughout the nesting surveys. All historic territories are visited a maximum of three times to determine occupancy. Territories are monitored up to 4 hours per visit to observe territorial behaviors such as defensive territorial displays, food exchanges between males and females, use of perches or night roosts. To determine fecundity, nests are visited frequently enough to positively identify nesting stage including territorial occupancy, courtship, incubation, rearing of nestlings, and fledging of young within a breeding season.

Climbing advisories are posted at the beginning of the breeding season to restrict access to areas historically used by cliff nesting raptors. The advisories are lifted if there is no territorial cliff nesting raptor or when activity around a nest ceases (i.e. nest failed or chicks fledged).

To date, more than 20 years of data show a relatively stable population in the monument. From 1984 – 2009 there have been an average of 7.4 territorial pairs in the core area. There have been an average of 6.3 nesting pairs producing 19.3 nestlings per year. The number of fledglings per nest have ranged from 0 to 4.4 per year. Including all territories, the most nestlings were

produced in 1994 (45) and the second most in 2009 (41). No nestlings were produced in 1998 during a year of heavy rains which likely prevented nesting.

Ancillary data collected during the field investigations have helped document two other cliff nesting raptors (golden eagles [*Aquila chrysaetus*] and peregrine falcons [*Falco peregrinus*]). Five other raptors have been documented at the park including: American Kestrel (*Falco sparverius*), Cooper's Hawk (*Accipiter cooperii*), Red-shouldered Hawk (*Buteo lineatus*), Red-tailed Hawk (*Buteo jamaicensis*), and White Tailed Kite (*Elanus leucurus*). Documented owl species include Barn Owl (*Tyto alba*), Great Horned Owl (*Bubo virginianus*), Northern Pygmy Owl (*Glaucidium californicum*), and Western Screech Owl (*Megascops kennicottii*). The monument has been involved with the Condor Recovery Program since 2003. There are now more than 26 California Condors (*Gymnogyps californianus*) in the monument. In 2010, the first condors nested in the monument in over 100 years.